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A NEW SPECIES OF TOAD, *BUFO CATAULACICEPS*,  
FROM THE ISLA DE PINOS AND WESTERN CUBA

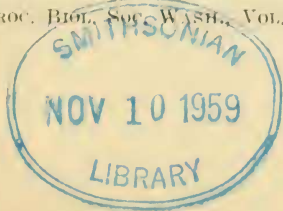
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The genus *Bufo* is represented in Cuba by four species: *Bufo peltacephalus* Tschudi, *Bufo empusus* Cope, *Bufo gundlachi* Ruibal, and *Bufo longinasus* Stejneger. The latter species has been considered (Barbour, 1937:96) as composed of three subspecies: *longinasus* Stejneger, known only from the unique type from El Guamá, Pinar del Río Province; *ramsdeni* Barbour, known from a small series from the type locality in Oriente, and *dunni* Barbour, known from the vicinity of the type locality in the Sierra de Trinidad in Las Villas Province. Of the four Cuban species, *B. peltacephalus*, *B. empusus*, and *B. gundlachi* have been reported from the Isla de Pinos (Barbour, 1916:307-308 and Ruibal, 1959:5).

Under the auspices of a National Science Foundation grant, large numbers of *Bufo* were taken throughout Cuba and the Isla de Pinos in 1957 and 1958. Study of these fresh specimens has necessitated an evaluation of the other Cuban species of *Bufo*; this study has been based primarily on materials collected by myself and party, but additional material has been loaned by Dr. Doris M. Cochran, Mr. Charles M. Bogart, and Dr. Ernest E. Williams, curators respectively of the United States National Museum (USNM), the American Museum of Natural History (AMNH), and the Museum of Comparative Zoology (MCZ). Their courtesy in loan of specimens has aided the present study greatly. Dr. Richard G. Zweifel has graciously supplied me with sonograms of the voices of several species of *Bufo*, and Miss Sandra L. Bressler has ably executed the illustrations. All these persons deserve my sincere thanks for their assistance in preparing the present paper.

On the night of July 4, 1958, after a very heavy afternoon rain, which persisted until long after nightfall, a chorus of *B. gundlachi* was heard along the highway from Nueva Gerona to Santa Fé on the Isla de Pinos. Since *B. gundlachi* had not been heard chorusing on the Isla, it seemed pertinent to collect a series of this toad. As the chorus site was approached, it was evident that another anuran was calling; the second call was that of a tiny toad, of which calling males are less than an inch in length. Later during the month of July, we collected additional individuals of this new species from four other localities

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on the Isla de Pinos, and a total number of 68 specimens was amassed. In addition, two specimens had been taken on December 27, 1957, by Edwin B. Erickson and George R. Zug from beneath pine logs and rocks in pine land on the Isla. Thus a total of 70 specimens is available from six localities on the Isla de Pinos.

In August, 1958, again after heavy rain, this same species of toad was heard calling at three localities in southern Pinar del Río Province. During August in Cuba the toads were much less common than in July on the Isla; it is probable that the maximum chorusing occurs in July, and the small choruses in Pinar del Río were due to the fact that the peak of the breeding season was already past. As a result, only 7 specimens were collected in Cuba.

Of the three subspecies of *B. longinasus* only the eastern *ramsdeni* has not been seen in life. We have studied, however, a single topotype of *ramsdeni*; this is an old specimen, collected by Charles T. Ramsden, and most indications of dorsal pattern have long since disappeared. Consequently, all comments on this race in the present paper may be considered as provisional, depending upon the acquisition of fresh material.

Ruibal (*op. cit.*) has made careful comparisons of *B. gundlachi* with all other West Indian toads. His data have been utilized in the present paper. However, I have examined extensive series of most Cuban forms, and pertinent comments on these are made in the paragraphs below. The new species of *Bufo* from the Isla de Pinos and western Cuba may be called.

***Bufo cataulaciceps*, new species**

Type: AMNH 61982, from 7.9 miles north of Santa Fé, Isla de Pinos, Habana Province, Cuba, taken July 4, 1958, by Albert Schwartz and George R. Zug. Original number 5612.

Paratypes: AMNH 61973-81, 61983-91, same data as type.

Distribution: the northern two thirds of the Isla de Pinos, and western Cuba from the vicinity of La Fé east to the vicinity of Pinar del Río city, all in Pinar del Río Province.

Diagnosis: A species of *Bufo* distinguished from all other West Indian species by its small adult size (maximum size of males, 30 mm.; maximum size of females, 27 mm.), pronounced wrinkles on the lores and at the angle of the mouth, contrasting pattern of pale dorso-lateral stripes against a dark background, prominent cranial crests, lateral position of the paratoid glands, and slightly webbed feet with three phalanges of the fourth toe completely free of web.

Description of type: An adult male, with the following measurements (all measurements in millimeters): snout-vent length, 23.5; length of head from snout to posterior margin of tympanum, 6.6; greatest width of head, 7.3; longitudinal diameter of eye, 2.0; naris to eye, 2.2; femur, 6.6; tibia, 7.0; fourth toe, 7.8; interorbital distance, 3.1; length of paratoid, 4.7.

The coloration of the type is dark gray (almost black) dorsally (see figure 1). There is a median fine, somewhat expanded posteriorly above the vent, gray line, in the very center of which is a pale yellowish hair line, both extending from the snout to the vent. Between the

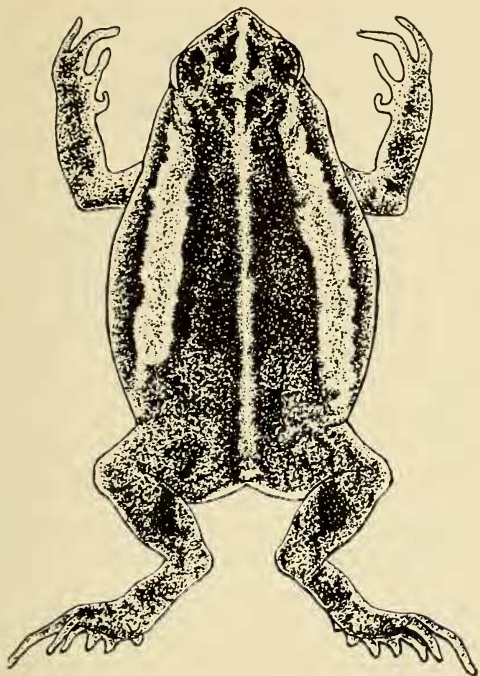


Fig. 1. *Bufo cataulaciceps*, new species, type, (AMNH 61982), dorsal aspect; snout-vent length 23.5 mm.

eyes, this median line is expanded into an irregular triangle, its apex pointed posteriorly, and its anterior side irregular and incised medially. Behind the apex of the triangle the median line is broken. Pale gray dorsolateral stripes begin at the posterior corner of the eye and extend posteriorly to the groin where they terminate by gradually becoming obscured. The dorsolateral stripes are boldly delineated both medially and laterally against the dark dorsal and lateral color, and the stripes are themselves a bit darker centrally than laterally. The lateral coloration is like that of the dorsum, and extends from the posterior margin of the eye to the groin as a sharply delineated band anteriorly, which becomes increasingly obscure posteriorly. The upper lip is dusky with a few scattered small black blotches; the supralabial line continues to above the axilla where it is white. The lower lip is immaculate. The forelimbs are dusky gray with one darker bar on the antibrachium and various irregular blotches on this same member. There is a single darker and diffuse blotch on the thigh, another on the crus, and a third on the pes, which, when the leg is flexed, combine to produce a single transverse bar across the entire dusky hindlimb. The venter is creamy white, with about twelve dusky spots on the abdomen.

The snout is relatively short and blunt, with the canthus rostralis emphasized by a prominent crest, which continues as a supraorbital

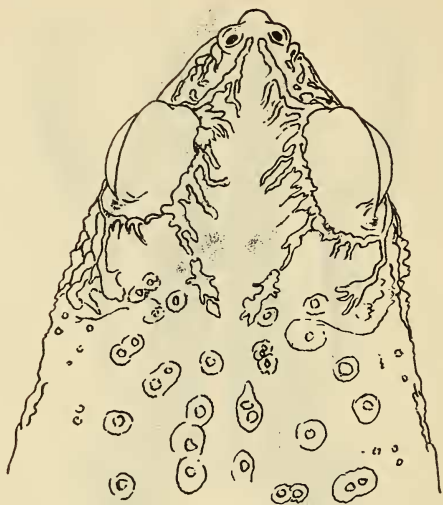


Fig. 2. *Bufo cataulaciceps*, type, dorsal aspect of head; details of pattern omitted to show structure only.

bony ridge both above and behind the eye. The median cranial crest and the supratympanic crest are both prominent and directed mesiad and are expanded posteriorly. The interorbital space, enclosed by the supraorbital crests, is completely smooth (see figure 2). The longitudinal diameter of the eye is slightly less than the distance of the eye from the naris, and the tympanum is small, inconspicuous, and close to the posterior margin of the eye. The lores, subocular area, and area above the angle of the mouth are raised into a series of prominent wrinkles or rugae (see figure 3). The dorsum is pustulose, the pustules relatively smooth and low, closely appressed to one another, and with a single

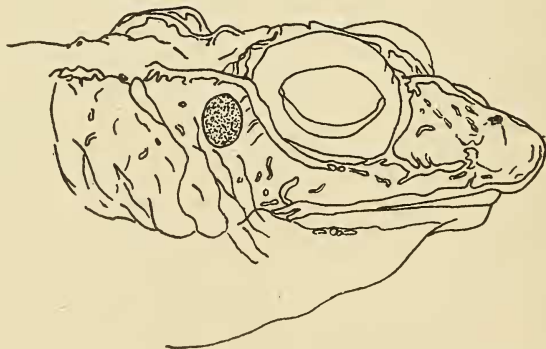


Fig. 3. *Bufo cataulaciceps*, type, lateral view of head; details of pattern omitted to show structure only.



central low spine in each wart. The dorsal surfaces of both fore- and hindlimbs are likewise pustulose with short but prominent spines. The skin of the belly and ventral surface of the limbs is covered with flattened, pavement-like granules without spines. The inner metatarsal tubercle is not keratinized. The fingers are relatively long, unwebbed, and 3-2-4-1 in order of decreasing length; the toes are slightly webbed, with the three distal phalanges of toe 4 completely free of the web. The toes are 4-5-3-2-1 in order of decreasing length.

Variation: The paratypes include 17 males and one female. From the Isla de Pinos there are, including the type and paratypes, 66 males and six females; from Pinar del Río there are seven males. The Isla de Pinos and Pinar del Río specimens will be discussed separately.

Measurements (means and extremes) of 64 Isla de Pinos males are: snout-vent length, 23.6 (21.5-25.6); and head length, 6.9 (6.0-7.5); head width, 7.8 (7.1-8.6); longitudinal diameter of eye, 2.4 (2.1-2.8); naris to eye, 2.3 (2.0-2.6); femur, 6.5 (5.5-7.5); tibia, 7.0 (6.3-7.8); fourth toe, 7.4 (6.5-8.6); interorbital distance, 3.2 (2.7-3.8); length of paratoid, 4.1 (3.2-5.6). All males but one (AMNH 61222) taken by us were calling or at least associated with choruses. Measurements of six Isla de Pinos females are: snout-vent length, 24.9 (21.3-27.2); head length, 7.0 (6.4-7.7); head width, 7.9 (7.1-8.5); longitudinal diameter of eye, 2.4 (2.0-2.6); naris to eye, 8.4 (2.2-2.8); femur, 6.6 (6.3-7.0); tibia, 7.3 (7.0-7.6); fourth toe, 7.9 (7.4-8.5); interorbital distance, 3.3 (3.1-3.5); length of paratoid, 4.5 (3.6-5.2). One female (AMNH 61223) was not taken from a chorus, and also shows no ovarian activity; it is the smallest of the females (snout-vent 21.3) and is likely immature. Sexual differences in size are not pronounced; females reach a slightly larger snout-vent length than males, and in general average slightly greater in all measurements taken. The vocal sac in males is spherical when distended, and not more darkly pigmented than the remainder of the venter in preserved specimens. Throats of females are white to creamy. Males have a patch of tiny dark gray to brown rugosities on the dorsal surface of the first digit of the forelimb; this patch may cover all the phalanges of this digit, and there may be an accessory but smaller patch adjacent to the base of the thumb on the palmar surface of the hand.

The coloration of the entire Isla de Pinos series is quite variable. The paratype lot was recorded in life as being dark brown to dull olive dorsally, with the middorsal line tan to yellowish tan. The dorsolateral stripes varied from tan to yellowish tan as well, and on a single individual the dorsolateral and median bands are unicolor. The venter was recorded as white to grayish. In preserved material all dorsa are some combination of shades of browns, grays, and black. In all there is some indication of a middorsal line, varying from an incomplete hairline to the fully expressed pattern as in the type. The dorsal color is usually darker than the dorsolateral stripes, but occasional specimens show the stripes very faintly, and one is now almost black dorsally. If the dorsal color is light gray, rather than dark gray or black, there is a dorsal pattern consisting of three pairs of blotches, one scapular, one sacral and one anal; these blotches extend from the inner border of the dorso-

lateral stripes to the middorsal line, and may be rectangles, rhombs, diamonds, or irregular in shape. The interocular figure is present in most specimens, but it may be more extensive than that of the type. In dark individuals, the figure may be poorly demonstrated or even absent (AMNH 62014). The banding on the hindlimbs is more pronounced in lighter specimens than it is in the type, and there may be an additional band across the knee on both thigh and crus. The forelimbs as well may have the banding more prominent than the type. There are no differences between males and females in coloration and pattern.

The bellies vary greatly in pattern. Of the entire Isla de Pinos series, the majority have the bellies immaculate creamy white; at the other extreme are five specimens in which the bellies are heavily mottled or blotched with dark gray to black. All conditions of intermediacy occur in the lot.

Structurally, the series resembles the type closely. The cranial crests are always distinct and enclose a smooth interorbital space. Occasionally there is an accessory transverse ridge partially separating the interorbital area from the remainder of the dorsum. The dorsum is always pustulose with small spines. The loreal, subocular, and supra-angular rugae are prominent in all specimens. The venter is without spines in all individuals. The lack of extensive webbing on the hindfeet is likewise characteristic of all specimens.

The paratoids are lateral in position, and directed obliquely dorso-medially from the angle of the jaws toward the posterior termination of the median cranial crest. The surface of the paratoids is smooth and they are relatively inconspicuous; posteriorly the glands merge almost imperceptibly into the spinose pustules of the dorsum. The oblique orientation of the paratoids and their inconspicuousness makes measurement of these glands difficult and unreliable.

Seven males from western Cuba have the following measurements: snout-vent length, 26.4 (23.6—29.6); head length, 7.7 (6.9—8.2); head width, 8.8 (7.9—9.6); longitudinal diameter of eye, 2.5 (2.2—2.8); naris to eye, 2.5 (2.3—2.7); femur, 7.6 (7.0—8.0); tibia, 8.2 (7.3—8.7); fourth toe, 8.8 (7.6—10.2); interorbital distance, 3.7 (3.3—3.9); length of paratoid, 5.6 (4.5—6.3). These figures indicate that the mainland Cuban population of *B. cataulaciceps* males reaches a larger size than their Isla de Pinos relatives. It is interesting to note that the smallest of the Cuban toads, AMNH 62045, is from near the southern coast of Cuba (near La Fé); were it not for this one specimen, the Cuban and Isla populations (as far as males are concerned) would be almost completely separable on the basis of size (maximum snout-vent length in Isla males, 25.6; minimum snout-vent length in Cuban males, 25.5). In addition, there is a difference in pattern in the Cuban toads which does not occur in any of the Isla series. In all Cuban *B. cataulaciceps*, the dorsolateral stripes send a median broad extension from the inner margins toward the midline between the position of the scapular and sacral blotches; when well expressed (AMNH 62046) the extension divides the dorsum into an if the crossband is not prominent, its position is indicated by irregular and diffuse edges of the dorsolateral stripes in the area between the anterior and a posterior dark area, separated by a wide crossband. Even

scapular and sacral blotches. Two Cuban specimens (AMNH 62043-44) have the dorsal pattern even more complex; here the dorsolateral stripes are almost completely obliterated by irregular black blotches, but the position of the Cuban crossband is still indicated. No Isla de Pinos specimens show any indication of this feature, and it is possible that larger size and the crossbanded pattern of Cuban toads will distinguish them subspecifically from their Isla de Pinos relatives. However, more specimens must be taken in Cuba before such a course is adopted. Certainly the situation as presently known is indicative.

Comparisons: *B. cataulaciceps* needs comparison only with the small species of Cuban toads, *gundlachi* and *longinasus* (with its races *longinasus*, *dunni*, and *ramsdeni*). Comparison with adult *peltacephalus* and *empusus* is unnecessary; both reach a much larger adult size (142 in *peltacephalus* males, 76 in *empusus* males). From juveniles of these two forms, *cataulaciceps* can be distinguished by having a middorsal pale line which is absent in both these species. In addition, juveniles of *B. peltacephalus* have either a vivid emerald green or reddish-fawn ground color in life and three relatively prominent paired blotches on the dorsum, and a black rather than pale interocular triangle. Juvenile *empusus* are variegated dorsally, and are much shorter limbed and narrower headed than *cataulaciceps*.

Pertinent comparisons are between *B. cataulaciceps*, and *B. longinasus* and *B. gundlachi*. *B. gundlachi* and *cataulaciceps* are similar in many ways, but are just as different in other. Both are small with laterally placed paratoids. Both have spinose dorsa, although the dorsa of *gundlachi* are conspicuously more spiny than those of *cataulaciceps*. The posterior medial cranial crests on *gundlachi* are usually composed of several isolated excrescences, whereas those of *cataulaciceps* are composed of a single rather regular bony ridge. The interorbital space in *gundlachi* is concave and has scattered isolated bony tubercles; this space is smooth in *cataulaciceps*. Calling male *gundlachi* from the Isla de Pinos (70 individuals) vary between 25.7 and 33.7 mm. in snout-vent length (mean, 30.0), and are thus all higher in this measurement than Isla de Pinos *cataulaciceps*. Length of tibia and length of fourth toe likewise show that the two species can be separated on this basis as well, with *gundlachi* having the higher measurements. The ratio of snout-vent length to hindlimb length will not separate the two species; Ruibal (*op. cit.*) gives the range of this ratio in *gundlachi* as 1.57 to 1.93. The ratio in *cataulaciceps* varies between 1.66 and 2.13; this is slightly higher than for *gundlachi*, but is not diagnostic. Patternwise, both *gundlachi* and *cataulaciceps* are comparable; however, the pattern elements in the latter are much more contrasting. Also, the entire snout of *gundlachi* is pale, instead of the pale color being restricted to an interocular figure as in *cataulaciceps*. Finally, the individual flattened granules on the belly of *gundlachi* are spinose, whereas these granules in *cataulaciceps* are without spines.

From the three races of *B. longinasus*, *B. cataulaciceps* can be distinguished at once by the lateral, rather than dorsal, paratoid glands. In the races of *longinasus* the cranial crests are very low and inconspicuous, in contrast to the high and conspicuous crests of *cataulaciceps*. All races of *B. longinasus* are distinctly long-snouted. The dorsa of

most specimens of *dunni* and an adult female *l. longinasus* are relatively smooth, with short and inconspicuous spines in the tubercles; however, an adult female *dunni* (AMNH 60820) and an adult male *ramsdeni* (USNM 63230) are extremely spinose dorsally, and a juvenile *dunni* (AMNH 60818) is spinose as well. Apparently the degree of spinosity is a variable character within the subspecies of *B. longinasus*. The impression is that *B. cataulaceps* is intermediate in spinosity, and that it is more spinose than most specimens of *dunni* and the seven known specimens of *l. longinasus*, but less so than some *dunni*, and *ramsdeni*.

No specimens of *B. longinasus* have the dorsolateral stripes strongly contrasting as are those of *cataulaceps*. Rather the dorsolateral stripes in these forms merge gradually medially with the dorsal color, and are not sharply delineated from the more central dark pigment. Some *dunni* have a median light area, and, if present, this line may expand into a rhombic interorbital figure; this is roughly comparable to the condition in *cataulaceps*. Ventrally, *ramsdeni* is much mottled with black, *dunni* is usually so mottled, but less extensively so than *ramsdeni*, and *longinasus* has a pure white belly, with three short dark brown dashes on the chest. In life, *l. longinasus* has yellowish-orange feet, inner side of arm, and jaws; this bright coloration does not occur in *cataulaceps*. Judging from the limited material of *B. longinasus* at present available, I suspect that *ramsdeni* and *dunni* are more closely related to one another than both are to *l. longinasus*.

The lores and angle of the jaw are smooth in most *dunni* and *l. longinasus*, spinose in *ramsdeni*, and tuberculate in *gundlachi*; no other Cuban species has these areas wrinkled as does *cataulaceps*.

The combined snout-vent/hind limb ratio for the various subspecies of *B. longinasus* from Ruibal (*op. cit.*) varies between 1.27 and 1.54; this ratio is thus well below that of *B. cataulaceps* (1.66 to 2.13). However, the recently collected adult female *B. l. longinasus* has a ratio of 1.79, within this ratio in *cataulaceps* but certainly nearer the lower than the higher extreme. The relatively and actually longer hindlimbs of the races of *B. longinasus* is a conspicuous feature of this species in life and easily separates them from other Cuban toads.

Comparisons of *B. cataulaceps* with the Hispaniolan *Bufo guntheri* Cochran and the Puerto Rican *Bufo lemur* Cope are hardly necessary. These two West Indian toads are much larger than *B. cataulaceps*, and are distinctly different structurally.

Remarks: *Bufo cataulaceps* is, by virtue of its short and lateral paratoid glands and well developed cranial crests, a member of the *peltacephalus-empus-gundlachi* group of Cuban toads. It shows little resemblance to *B. longinasus* and, of the *peltacephalus* group, is obviously most closely related to *gundlachi*.

On the Isla de Pinos, *cataulaceps* was taken chorusing with both *gundlachi* and *empus*, never with *peltacephalus*. In such choruses, *cataulaceps* calls from the margins of temporary pools, seated either in very shallow water or on merely moist earth or gravel at the pool's edge. Males are extremely shy, and cease calling at any disturbance; this behavior is in contrast to that of both *gundlachi* and *empus*, which customarily continue calling loudly when approached. The spherical vocal sac is rather small, and about the size of a pea in diameter.



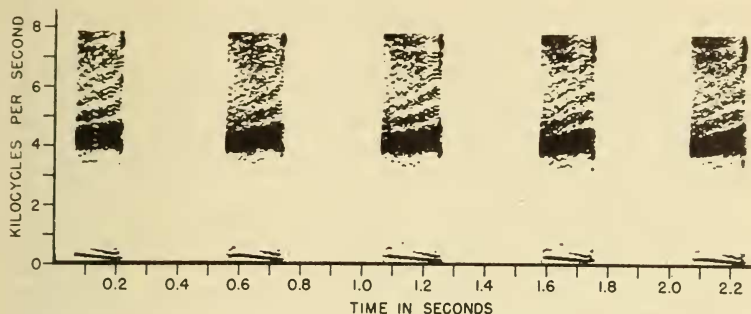


Fig. 4. Sonogram of call of *Bufo gundlachi*, recorded 2.8 mi. E La Mula, Pinar del Río Prov., Cuba, 17 June 1957; temperature 23°C.

The call however, is relatively loud for such a small creature, and can be readily detected in a mixed chorus, although the ventriloqual quality of the call makes locating calling males difficult. In deep grass, *cataulaciceps* is difficult to locate, due to its shyness, small size, and very dense herbaceous cover. No choruses of *cataulaciceps* equalled in volume or number of calling males those of either *gundlachi* (which may have extensive choruses involving hundreds of vocalizing males) or *empus* (which may have as well large choruses, both as to number of individuals and geographic area).

The calls of *B. cataulaciceps* and *B. gundlachi* are quite different. Inspection of figures 4 and 5, which are sonogram records of tape recordings of these two species, reveals that in the smaller species, the dominate frequency is 4500 kilocycles per second, as against 3000 kilocycles per second in *gundlachi*. The duration of the individual call is 0.2 seconds in *cataulaciceps* with an interval between calls of about 0.35 seconds; the individual call of *gundlachi* lasts about 1.3 seconds with a 0.2 interval between calls. The calls are thus seen to differ in dominant frequency, duration, and interval. Aurally, the call of *cataulaciceps* is reminiscent of that of *B. quercicus*, but lacks the whistling or peep-like

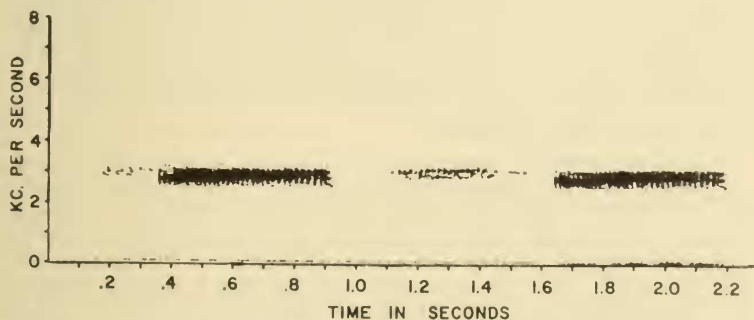


Fig. 5. Sonogram of call of *Bufo cataulaciceps*, recorded 18 mi. SSW Nueva Gerona, Isla de Pinos, 18 July 1958; temperature 25°C.

quality of the latter species; sonograms of the calls of *cataulaciceps* and *quercicus* are not at all similar.

Amplexing pairs of *cataulaciceps* as well as eggs were both collected. Amplexus is *axillary*; eggs of this species are smaller than those of *gundlachi*, and remarkably appear to be deposited in clumps rather than in typical *Bufo*-like strings. Tadpoles were raised from the eggs, and descriptions of these portions of the life history must await additional data.

The relationships of the fauna of the Isla de Pinos and western Cuba have been pointed out by other workers and by myself (Schwartz, 1959:38). The occurrence of *B. cataulaciceps* in these two areas adds another species common to the two regions. I suspect that this diminutive *Bufo* will be found to range as far east as the vicinity of Batabanó, Habana Province, along the south coast and south of the Sierra de los Organos and Sierra del Rosario; the occurrence on the Isla de Pinos and in western Cuba of some plants such as *Pinus tropicalis*, *Colpothrinax wrightii*, and *Byrsonima coccolobaefolia*, all of which are typical of the habitat which *B. cataulaciceps* occupies, may well be found to delimit the area occupied by this small toad on the Cuban mainland.

Only two specimens of *B. cataulaciceps* have been taken which were not associated with choruses. These two toads were collected from beneath rocks lying on Mal Pais gravel on the Isla de Pinos, adjacent to a then dry depression in pine woods. These two individuals are the basis for Ruibal's (*op. cit.*:5) records of *B. gundlachi* from the Isla de Pinos. Although these toads are actually referable to *B. cataulaciceps*, *B. gundlachi* does occur on the Isla de Pinos, as previously noted. Since *B. cataulaciceps* has seldom been taken when not involved in sexual activities, it is not improbable that it spends much of its time underground, coming to the surface to breed during extremely wet weather in midsummer.

All localities for *B. cataulaciceps* in Pinar del Río are in the lowlying Southern Coastal Plain of Pinar del Río (Llanura costera del sur de Pinar del Río) and in the Península de Guanahacabibes subregion (see Marrero, 1951). On the other hand, the type locality of *B. l. longinasus* is apparently in the Alturas de Pizarras, a pine-clad piedmont both north and south of the Sierra de los Organos. The six new specimens of this rare species were all collected in the Alturas, in gently rolling pine woods. It is possible that in Pinar del Río, *cataulaciceps* occupies the low coastal plain and *longinasus* the higher, but still xeric, piedmont. Much collecting in the very mesic Sierra de los Organos has yielded no *longinasus*, despite the fact that *dunni* (and apparently *ramsdeni* as well) are both forest inhabitants.

Specimens examined (specimens of *B. empusus* and *B. peltacephalus* not listed) *Bufo cataulaciceps*: Isla de Pinos, 7.9 miles north of Santa Fé, 19 (AMNH 61973-91); 12.7 miles south southwest of Nueva Gerona, 10 (AMNH 61992-62001); 18 miles southwest of Nueva Gerona, 3 (AMNH 622002-04); 5.8 miles northeast of Sigüanea, 30 (AMNH 62005-34); 5 miles northeast of Sigüanea, 2 (AMNH 61222-23); 2 kilometers north, 14.4 kilometers west of Santa Fé, 6 (AMNH 62035-40); Júcaro, 1 (MCZ 30860); Santa Fé 1 (MCZ 30862). Cuba, Pinar del Río, 6.5 miles southeast of Pinar del Río, 4 (AMNH 62041-—

44); 6.4 miles southwest of Isabel Rubio, 2 (AMNH 62046—47); 1 mile southeast of La Fé, 1 (AMNH 62045).

*Bufo gundlachi*: *Isla de Pinos*, 2.1 miles north of Santa Fé, 33 (AMNH 63152); 1.3 miles south southwest of Nueva Gerona, 15 (AMNH 63153); 2 kilometers east of Santa Barbara, 10 (AMNH 63154); 7.9 miles north of Santa Fé, 9 (AMNH 63151); nr. Santa Fé, 3 (MCZ 30859, 30861, 30863); 1.8 miles south of Nueva Gerona, 4 (AMNH 63155). *Cuba*, *Pinar del Río*, 2.3 miles east of La Mulata, 4 (AMNH 60821—24); 2.8 miles east of La Mulata, 4 (AMNH 60825—28); 2.9 miles east of Isabel Rubio, 1 (AMNH 60829); 6.5 kilometers southeast of Pinar del Río, 6 (AMNH 62050); 2.5 miles south, 7 miles east of Herradura, 55 (AMNH 60830—56, 61474—75, 61830—39, plus sixteen untagged specimens); 5.5 miles east of Candelaria, 29 (AMNH 60890—918); *Habana*, 1.5 kilometers east of Campo Florido, 59 (AMNH 63156); *Matanzas*, 1.5 miles west of Canasí, 5 (AMNH 62049); *Las Villas*, 28 kilometers east of Trinidad, 6 (AMNH 60884—89); 2 kilometers southeast of Aguada de Pasajeros, 19 (AMNH 62048); *Camagüey*, Embarcadero de Morón, 1 (AMNH 60857); 9.4 miles south of Contramaestre, 26 (AMNH 60858—83).

*Bufo l. longinasus*: *Cuba*, *Pinar del Río*, El Guamá, 1 (USNM 27419); 19.5 kilometers northeast of Pinar del Río, 6 (AMNH 61648—52, 61972).

*Bufo l. dunni*: *Cuba*, *Las Villas*, 4 kilometers west, 12 kilometers north of Trinidad, 14 (AMNH 60806—19); Topes de Collantes, 1 (AMNH 60820); 0.9 miles south of Topes de Collantes, 4 (AMNH 60802—05).

*Bufo l. ramsdeni*: *Cuba*, *Oriente*, Los Hondones, Guantánamo, 1 (USNM 63230).

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